

ADDENDUM A

The TMDL developed for the Lower Segment of the Blackwater River was based on the Virginia State Standard for fecal coliform. As detailed in Section 1.2, the fecal coliform standard states that the 30-day, geometric-mean concentration shall not exceed 200 cfu/100 ml. As such, pollutant concentrations were modeled over the entire duration of a representative modeling period, and pollutant loads were adjusted until the standard, reduced by a margin of safety equal to 5%, was met (Figure 5.4). Table AA.1 represents the average annual loads during the modeled period after allocation of pollutant loads. Loads from permitted point sources (WLA) and nonpoint sources (LA) are represented, as are the load associated with the margin of safety (MOS) and the sum of these three loads (TMDL). It is worth noting that the MOS is less than 5% of the TMDL. This outcome illustrates the inherent difference between concentration, which is the amount of a pollutant (e.g. numbers of fecal coliforms) in a given volume of water, and annual loads, which is the total amount of the pollutant regardless of the volume of water. Additionally, this situation reflects the fact that it would be inappropriate to use annual loads, such as those in Table AA.1, as a target goal for meeting a water quality standard that is based on concentrations.

The Lower Blackwater is fed by Maggoddee Creek and the Middle Blackwater, which, in turn, is fed by the Upper Blackwater and North and South Forks of the Blackwater. Because of this relationship, water quality improvement in the Lower Blackwater Stream Segment is dependent not only on loads entering from its immediate drainage, but from upstream sources.

Table AA.1 Average annual loads (cfu/year) modeled after TMDL allocation in the Lower Blackwater River Watershed.

Impairment	WLA ^{1,2}	LA ²	MOS ²	TMDL ²
Total	1.81E+11	5.19E+14	1.91E+13	5.38E+14

1 The WLA includes permitted point sources in the South Fork Blackwater, Middle Blackwater and Maggoddee Creek drainages. The only point source permitted for fecal control in the South Fork Blackwater drainage is Callaway Elementary School (VPDES # VA0088561). The only discharging point source permitted for fecal control in the Middle Blackwater drainage is Hammock Trailer Park (VPDES # VA0086614). The Franklin Manor Home for Adults (VPDES # VA 0067555), while not currently discharging, also has a permit for fecal control and is represented as part of the WLA as well. The only point source permitted for fecal control in the Maggoddee Creek drainage is Boones Mill Wastewater Treatment Plant (VPDES # VA0067245).

2 The WLA, LA, MOS and TMDL include loads from the South Fork Blackwater, North Fork Blackwater, Upper Blackwater, Middle Blackwater, Maggoddee Creek, and Lower Blackwater drainages.

ADDENDUM B**The Lower Blackwater River and Maggodee Creek Factor Value:**

During the development of this TMDL, it was discovered that, in low flow conditions, the model consistently under represented the concentration of fecal coliform in these river segments. These under estimations were more pronounced in Maggodee Creek and the smaller tributaries of the lower Blackwater. The model used for this TMDL duplicated the assumptions and loadings that were used for TMDL development in the four Upper Blackwater River segments (North Fork of the Blackwater, South Fork of the Blackwater, Middle Fork of the Blackwater, and the Upper Blackwater). Since the assumptions made in the previous TMDLs allowed us to develop a model that accurately reflected the concentrations of fecal coliform in the upper segments, it was felt that a change in the loadings would question the integrity of both studies. It was believed that an unknown mechanism may be contributing to the elevated fecal coliform concentrations detected in this segment.

One possible mechanism would be the resuspension of deposited fecal coliforms. An agent (cattle in-stream or other mechanism) causing a resuspension of bacteria may be responsible for the elevated fecal coliform concentrations. The model developed for this TMDL, used a factor value based on the likelihood that cattle in-stream were causing the resuspension of fecal coliform. The relative size of the factor value was determined by dividing the stream access area by the sum of the pasture area and the stream width.